

Customer No.: 31561
Application No.: 10/711,445
Docket NO.: 12295-US-PA

AMENDMENT

In the Claims:

1. (original) A method for fabricating a flash memory device, comprising:
forming a tunneling oxide layer over a substrate;
forming a charge storage layer over the tunneling oxide layer; and
performing a thermal oxidation process so that a portion of the charge storage layer is oxidized to form an inter-gate dielectric material layer, while other portion of the charge storage layer not being oxidized is converted into a plurality of nanocrystals, wherein the nanocrystals form a floating gate.
2. (original) The method of claim 1, wherein the step of forming the charge storage layer comprises forming a $\text{Si}_x\text{Ge}_{1-x}$ layer or forming a metal silicide layer.
3. (original) The method of claim 2, wherein the charge storage layer comprising $\text{Si}_x\text{Ge}_{1-x}$ is formed by performing a low pressure chemical vapor deposition (LPCVD) process with a reactive gas of SiH_4 or GeH_4 , under an operating pressure between 1 and 1000 mTorr, and an operating temperature is between 600 and 800 degrees centigrade.
4. (original) The method of claim 2, wherein the metal silicide layer comprises tungsten silicide, titanium silicide, cobalt silicide or nickel silicide.
5. (original) The method of claim 4, wherein the charge storage layer comprises W_YSi_Z , and the value of Y is between 0.5 and 5, and the value of Z is between 1 and 3.
6. (original) The method of claim 5, wherein the charge storage layer is formed by performing a low pressure chemical vapor deposition (LPCVD) process with a reactive gas of WF_6 , SiH_4 , Si_2H_6 , SiH_2Cl_2 , or a composition thereof, under an operating pressure

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between 1 and 1000 mTorr, and an operating temperature between 300 and 800 degrees centigrade.

7. (original) The method of claim 1, wherein the thermal oxidation process comprises a rapid thermal oxidation process.

8. (original) The method of claim 7, further comprising:

providing gases including oxygen during the rapid thermal oxidation process.

9. (original) The method of claim 8, wherein the gases including oxygen comprises O₂, H₂O or NO_x.

10. (original) The method of claim 7, wherein a process temperature of the rapid thermal oxidation process is between 850 and 1000 degrees centigrade.

11. (original) The method of claim 1, wherein the charge storage layer is formed by performing a low pressure chemical vapor deposition (LPCVD) process.

12. (original) The method of claim 1, wherein the thermal oxidation process further comprises:

forming a control gate over the inter-gate dielectric layer, wherein a stacked gate structure includes the tunneling oxide layer, the floating gate, the inter-gate dielectric layer and the control gate; and

forming a source/drain region in the substrate at each side of the stacked gate structure.

13-17 (cancelled).